

**WHAT IS CLAIMED IS:**

1. A composite structure comprising:

an elongate core material of a sintered diamond comprising 80% by volume or more  
 5 diamond particles of a mean particle size not larger than  $3.5 \mu\text{m}$ , and an iron group metal  
 binding the diamond particles; and

a shell layer that covers the circumference of said core material and comprises a  
 sintered alloy of at least one kind of hard particles selected from among carbide, nitride and  
 carbonitride of at least one metal element selected from the group of 4a, 5a and 6a group  
 10 metals of the Periodic Table and diamond particles of a mean particle size not larger than  $5 \mu\text{m}$ , and an iron group metal binding the hard particles and diamond particles,

wherein content of said diamond particles included in said shell layer is from 5 to  
 45% by volume.

15 2. The composite structure according to claim 1, wherein a ratio  $w/D_1$  of a width "w" of a  
 region having a low concentration of iron group metal in said core material in said interface  
 with said shell layer to the mean diameter " $D_1$ " of said core material is 0.2 or less.

3. The composite structure according to claim 1, wherein a ratio  $d_{s1}/d_{s2}$  of the mean particle  
 20 size  $d_{s1}$  of the diamond particles in said shell layer to the mean particle size  $d_{s2}$  of the hard  
 particles included in said shell layer is in a range from 0.4 to 3.0.

4. The composite structure according to claim 1, wherein a ratio  $D_2/D_1$  of the mean thickness  
 $D_2$  of said shell layer to the mean diameter  $D_1$  of said core material is in a range from 0.01 to  
 25 0.5.

5. A multiple filament type composite structure comprising a plurality of composite structures of claim 1, which are bundled and bonded.

5 6. A sheet-like composite structure comprising a plurality of composite structures of claim 1, which are arranged and bonded in a sheet-like configuration.

7. A laminated composite structure comprising a plurality of sheet-like composite structures of claim 6, which are stacked.

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8. The laminated composite structure according to claim 7 wherein the sheet-like composite structures are alternately stacked in different directions.

9. The composite structure according to claim 1 or 6 that is used as a cutting tool.